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ICBMS—THEIR RELEVANCE TO US SECURITY AND THE
UNITED STATES AIR FORCE IN THE 21ST CENTURY

by

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Abstract

Intercontinental ballistic missiles (ICBMs) have had and continue to have a variety of impacts on the United State Air Force. National security guidance, including a recent nuclear policy review, make clear the expected existence of ICBMs for the foreseeable future. At the same time, the relevance of ICBMs to the nation is not wholly clear. The numbers and types of nuclear arms continue to be negotiated away, and there is some academic discussion on the continued need for the traditional strategic force posture—the nuclear triad.

The Air Force is articulating requirements for a new land-based strategic nuclear deterrent as well as conducting studies for long-range strike capabilities. Also, the idea of projecting power with a conventional warhead on a ballistic missile at intercontinental ranges is prominent in some circles, offering a means to strike targets rapidly with minimal reaction times.

Historically, though, the Air Force neglected the ICBM, and their development was slowed by the Air Force's focus on the manned strategic bomber. For the last three decades of the Cold War, ICBMs steadily supplanted bombers as the Air Force's main contribution to the national nuclear deterrence posture. However, this favoritism as well as a neglect of deterrence theory contributed to an Air Force indicted by Carl Builder for emphasizing the airplane over other means of delivering firepower.

Overall, the Air Force needs familiarity with various issues associated with the ICBM, for with the right emphasis this cold war weapon system can stay viable throughout the coming century.

Chapter 1

Introduction

Intercontinental ballistic missiles (ICBMs) have been, and continue to be, a significant part of the United State Air Force. While their initial development was slowed by the Air Force's focus on the manned strategic bomber, for the last three decades of the Cold War ICBMs steadily supplanted bombers as the Air Force's main contribution to the national nuclear deterrent posture. Now, the land-based missile force is receiving upgrades and the Air Force is planning an ICBM modernization program. Also, a recent Department of Defense nuclear policy review outlined the expected existence of ICBMs for the foreseeable future. At the same time, the relevance of ICBMs to the nation is not wholly clear to some. The numbers and types of nuclear arms continue to be negotiated away, and there is some academic discussion on the continued need to invest in the traditional strategic force construct—the nuclear triad.

Thus, the purpose of this paper is to outline the issues surrounding ICBMs of which the Air Force should be aware. Given the Air Force's contributions to the nation's defense, as articulated by *Global Engagement's* core competencies, examining the intersections with the ICBM weapon system is integral to this research. Specifically, identifying the issues from which Air Force policymakers can better address the relevance of ICBMs is this paper's goal. Essentially, can the Air Force serve the nation better by divesting itself of a Cold War relic—the silo-based, nuclear tipped, intercontinental ballistic missile? Or, does the descendant of the

German V-2 still offer a means for the Air Force to defend the nation throughout the twenty-first century?

To address the above issues, the paper will begin by addressing various background issues associated with ICBMs in general. It will first look at the arguments for ridding the inventory of ICBMs. This position is largely articulated by proponents of general nuclear disarmament, as well as by those who believe stability and deterrence in a nuclear world can be increased without ICBMs. Then, the research will turn to US strategic guidance, looking for implicit and explicit words with respect to the ICBM's future.

Chapter Two will examine current USAF perspectives on the ICBM. This will include covering stated ICBM modernization requirements, both from a traditional nuclear aspect as well as looking at the relevance of conventional warhead-equipped ICBMs. The intent is to find out how the USAF has articulated its future needs and whether there is relevance for ICBMs. It will also examine some of the issues related to a conventional warhead-equipped ICBM.

Finally, Chapter Three will conclude by examining how the USAF historically approached ICBM development. This will include recognizing that there is a historical basis for USAF corporate neglect of the ICBM development, one that contributed to Carl Builder's indictment of the Air Force's stewardship of airpower in *The Icarus Syndrome*. The paper will conclude by providing recommendations for Air Force leaders to consider in the coming years as the issue of ICBM relevance invariably becomes prominent.

Chapter 2

Contextual Background Relevant to the ICBM

In addressing ICBM relevance, several issues come to the fore. On one hand are the pressures associated with disarmament and deterrence, two areas often contradicted by each other's conflicting fundamental precepts. Another key contextual area is in national security guidance, a review of which reveals considerations staking the claim for ICBM relevance.

Disarmament, the Triad and the ICBM

Nuclear disarmament ebbs and wanes as a topic within public discourse. Several years ago, General George Butler well illustrated the contemporary nuclear abolitionist movement when, shortly after retiring as Commander in Chief of Strategic Command, he vocally proclaimed “the prospect of restoring a world free of the apocalyptic threat of nuclear weapons” as a top imperative.¹ The issue further came to the fore in the late 1990s, when prominent military officials from 17 countries called the continued existence of nuclear weapons a “peril to global peace and security and to the safety and survival of the people (they) are dedicated to protect.”² Lately, the subject has been largely sidelined from public view as America's national security has focused on terrorism and weapons of mass destruction proliferation. (Witness the past year's relatively scant notice of the “Moscow Treaty”—also known as the Strategic Offensive Reductions Treaty—which was signed by Presidents Bush and Putin in July 2002 and recently

approved by the Senate, all with little fanfare.) Nonetheless, as a signatory of the Non-Proliferation Treaty nuclear disarmament remains an implicit US policy goal.

With respect to ICBMs, the connection to nuclear disarmament has been both indirect as well as direct. Indirectly, it is generally argued by proponents of nuclear disarmament that a weapon system built specifically to deliver nuclear munitions is no longer relevant. For example, in 1995 Australia sponsored an international commission which presented the United Nations with a roadmap for abolishing nuclear weapons. Known as “The Report of the Canberra Commission on the Elimination of Nuclear Weapons,” it called into doubt the deterrent value of nuclear weapons and postulated that accidental or purposeful use was a likely by-product of maintaining nuclear weapons. Further, it outlined several indirect measures such as taking nuclear forces off of alert postures as well as removing nuclear warheads from delivery vehicles.³

From a direct perspective, within the context of a nuclear disarmament debate the discussion of ICBMs has largely revolved around one aspect—elimination. More specifically, it is generally the arms control community which ends up supporting the abolitionists by questioning the continued relevance of ICBMs. In this case, however, the arguments are less emotional and more practical, and center on the subject of the nuclear triad.

The cold war’s nuclear triad, consisting of land- and sea-based missiles as well as manned bombers, was largely considered an essential component of US (and Soviet) nuclear force posture. It was the “interaction of the three US strategic forces elements, often referred to as the “synergism” of the TRIAD, (which complicated) Soviet attack calculations...(increasing) the overall effectiveness of the US force as a deterrent.”⁴ The triad has been a steadfast facet and—

as will be seen in a subsequent section—while redefined, will remain an integral part of the US military.

At the same time, the triad has occasionally come into question. In 1980, for example, an Institute for Policy Analysis Special Report on the Future of Land-based Strategic Forces noted:

“The existence of the triad is largely accidental, a product of the impetus given during the latter years of the Eisenhower Administration and during the Kennedy Administration to the augmentation of strategic nuclear forces. As such, there is nothing sacred about it. There are, however, reasons for maintaining a mixture or various types of forces, whether this mixture follows the present pattern or a different one.”⁵

Few concrete efforts were made to restructure the triad, although nuclear force policy decisions occasionally considered alternatives to the basic triad. For example, in the first nuclear policy review since the 1970s—the Clinton Administration’s 1994 Nuclear Posture Review—at least one major figure advocated scrapping the ICBM force.⁶ Today, the leading voices questioning the need for maintaining a triad-based force come mainly from the arms control community.

Stephen Cimbala tackles the triad in several recent books about 21st century nuclear forces. In chapters titled “Triad and Tribulation” and “Triage of Triads,” he addresses the maintenance of nuclear triads as a key question for US (and Russian) defense planners and arms controllers. Cimbala considers the triad an “accepted truism” of the Cold War, and ultimately concludes that political, military, economic and other reasons can argue for and against triads, dyads (two nuclear legs), and monads (one leg). In general, he concludes: “A dyad of US bomber-delivered weapons and submarine-launched missiles fulfills the requirements of assured destruction and target coverage...as well as a triad does.”⁷

For every viewpoint advocating triad realignment, one can find the opposite perspective. For example, the October 1998 Defense Science Board formed a task force to look at nuclear

deterrence; its observation on the triad's relevance was resounding. Overall, it considered the triad "highly stabilizing" and "well worth the price." With respect to the ICBM force, it particularly saw this leg as increasing in relative value as well as offering high stability.⁸

21st Century Deterrence

Contemporary discussions of deterrence also make a good case for the continued relevance of ICBMs. More precisely, it is the match between deterrence requirements generated by 21st century threats and attributes associated with ICBMs that support the latter's continuing relevance.

Daniel Goure addresses the issue of modern deterrence in a Policy Review article titled "Nuclear Deterrence, Then and Now." He outlines a premise that the original rationale for US nuclear force development has eroded, while recent doctrinal shifts by the Bush Administration on the role of nuclear weapons have left a void in deterrence theory. He thus proposes several key roles for strategic nuclear forces, including "hold at risk those targets that are most highly prized by a potential adversary but that are not accessible by conventional means" and "neutralize a proliferator's WMD."⁹

Similarly, Keith Payne in "Deterrence in the Second Nuclear Age" argues:

US deterrence policies must be ready to address a wide range of threats. Defense planners concerned about deterrence can no longer afford the luxury of concentrating primarily on one enemy. The US military capabilities suited to deterring across a wide spectrum of challengers may be quite varied with regard to both the type of force-use threatened and the targets selected...In some cases, a conventional threat may be suitable; in others, deterrence may require a proportional nuclear, chemical or biological threat; in still others, a grossly disproportional threat may be needed.¹⁰

The key point from the above is that deterrence is still applicable in the foreseeable future. Just as important is the recognition that the threat drives the deterrence needs. As the various

national security guidance documents show below, proliferation of weapons of mass destruction is a recurrent theme. This threat has several components, but one of the most germane is the delivery means. The Commission to Assess the Ballistic Missile Threat to the United States (also known as the Rumsfeld Commission) further delineated the threats that US deterrence will have to address:

Since the end of the Cold War, the geopolitical environment and the roles of ballistic missiles and weapons of mass destruction have both evolved. Ballistic missiles provide a cost-effective delivery system that can be used for both conventional and non-conventional weapons. For those seeking to thwart the projection of U.S. power, the capability to combine ballistic missiles with weapons of mass destruction provides a strategic counter to U.S. conventional and information-based military superiority...Emerging powers therefore see ballistic missiles as highly effective deterrent weapons and as an effective means of coercing or intimidating adversaries, including the United States.¹¹

While other delivery means for weapons of mass destruction abound, it is the threat of others' ICBMs that influences the deterrent value of US ICBMs. As the Director of Central Intelligence pointed out in congressional testimony, there is "prestige (and a) degree of deterrence and coercive diplomacy associated with ICBMs;"¹² while he intended this description to apply to threats to the US, the opposite also hold true as the ICBM force is a key component of the US deterrence kitbag.

National Security Guidance and the ICBM

A survey of contemporary national security guidance and doctrine for explicit and implicit mention of ICBMs is important in forecasting their relevance. As far as direct references, these are few; indirectly, however, much can be interpreted from the documents in terms of how US national security will rely upon the ICBM weapon system.

National Security Strategy

The capstone document is “The National Security Strategy of the United States of America;” published in September 2002, it can best be summarized by an ends/ways/means construct. It should be noted there is no direct mention of means, leaving open to extrapolation any rationale or justification for ICBMs. In terms of American security objectives—or ends—the document identifies a safer and better world as the main goal. The safer aspect is a reflection of 9/11 and its aftermath, the continuing war on terrorism. Better reflects goals such as “political and economic freedom, peaceful relations with other states, and respect for human dignity.”¹³ The ways, or strategies, to achieve the above ends center around “a distinctly American internationalism that reflects the union of our values and our national interests.”¹⁴ This internationalist strategy encompasses eight aspects, several of which are relevant to this discussion.

The most germane deals with preventing weapons of mass destruction threats to the US and its allies/friends. In this section one finds an outline of the threat (rogue states and terrorists possessing nuclear, biological and chemical weapons, along with ballistic missile technology), as well as a prescribed US response (centering around the much-publicized notion of preemption). Specifically, the NSS calls for “proactive counterproliferation efforts” which in turn rely on aspects such as counterforce capabilities able to “prevail in any conflict with WMD-armed adversaries.”¹⁵ To further support preemptive options, the NSS also seeks “to continue to transform our military forces to ensure our ability to conduct rapid and precise operations to achieve decisive results.”¹⁶

This last aspect is also reflected in the eighth means/strategy, which specifically deals with “Transforming America’s National Security Institutions to Meet the Challenges and Opportunities of the Twenty-First Century.” Here the sub-objectives are to assure our allies and

friends; dissuade future military competition; deter threats against U.S. interests, allies, and friends; and decisively defeat any adversary if deterrence fails. Again the mention of any specific means to achieve this is absent; what is visible is the notion that no aspect of the US military is sacred, for “The major institutions of American national security were designed in a different era to meet different requirements. All of them must be transformed.”¹⁷ At the same time, “Our forces will be strong enough to dissuade potential adversaries from pursuing a military build-up in hopes of surpassing, or equaling, the power of the United States.”¹⁸

Thus, the NSS reveals several concepts that could be linked to any discussion of ICBM relevance to US security strategy. On one hand, the entire US military complex is open to transformation—hence, decades-old weapons born of World War II-era ideas such as ballistic missiles are presumably open to re-validation of their relevance. From another angle, the US military must be able to deter (and defeat if deterrence fails) any enemy throughout the spectrum of conflict (including, presumably, global nuclear warfare). Further, the military must dissuade force build-ups which could equal or surpass US power; and since ballistic missiles are the “coin of the realm” for others, this may mean the US needs ICBMs to dissuade (or deter, or defeat) an ICBM-equipped potential adversary. Finally, in terms of counterproliferation there appears a need for forces with the key attributes of speed, precision, and full-spectrum response.

Quadrennial Defense Review

Published shortly after 9/11, the Quadrennial Defense Review (QDR) offers little direct intersection with ICBMs. The most straightforward aspect is the reference to a Nuclear Posture Review (NPR); mandated by Congress, the NPR was to “describe the size, structure, and posture of the nation’s nuclear forces and the contribution they can make to deterrence in the coming decades.”¹⁹

Like the NSS, however, some indirect references can be gleaned from the QDR. The QDR identifies four security goals (mirrored in the NSS published a year later): assuring allies; dissuading military competitors; deterring threats; and decisively defeating any adversary. It is in the areas of deterrence and defense of the US that one can interpret some connection to ICBMs

Specifically, the QDR identifies a key threat as certain nations which are pursuing chemical, biological, radiological, nuclear, and enhanced high explosive weapons, as well as developing ballistic missile capabilities.²⁰ Detering, defeating and defending against this type of threat requires a multi-faceted response, one the QDR notes as involving both offensive and defensive capabilities. (The defensive capabilities—particularly missile defenses—get plenty of mention, generally building upon the work of the Rumsfeld Commission.)

For offensive weapons, the attribute of long-range precision strike comes to the fore in the QDR's section on defense strategy. It calls for "the ability to project power at long ranges (which) helps to deter threats to the United States and, when necessary, to disrupt, deny, or destroy hostile entities at a distance."²¹ This facet is coupled with numerous calls for rapid reaction capabilities. For example, in the section on "Major Combat Operations," the QDR states for US forces "the focus will be on the ability to act quickly when challenged" and, in a combination of the two facets of speed and precision, the QDR notes "US forces will fight from a forward deterrent posture with immediately employable forces, including long-range precision strike capabilities from within and beyond the theater, and rapidly deployable maneuver capabilities."²²

Further, the QDR mentions "Denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement with high-volume precision strike, through a

combination of complementary air and ground capabilities, against critical mobile and fixed targets at various ranges and in all weather and terrains,”²³ which again points out the need for long-range, precision strike.

It also notes in the section on denying enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement, that “emphasis must be placed on manned and unmanned long-range precision strike assets, related initiatives for new small munitions, and the ability to defeat hard and deeply buried targets.”²⁴

Annual Defense Report

The Secretary of Defense produces an “Annual Report to the President and the Congress,” also known as the Annual Defense Report (ADR). It is a statutory requirement and is intended to outline how the Department of Defense developed its capabilities and intends to maintain and improve them in the future. Over the last decade the ADR has been specific in its discussion of ICBM issues; key excerpts will help understand senior-level direction concerning the nuclear force structure and posture.

The 1995 Annual Defense Report includes a Nuclear Posture Review (NPR) which built on the QDR of 1993. Several key themes emerged from the NPR, including the views that while “nuclear weapons are playing a smaller role in US security than at any other time in the nuclear age,” and that “the United States requires a much smaller nuclear arsenal under present circumstances,” there is still uncertainty concerning denuclearization and the US therefore must maintain some nuclear forces as a hedge against uncertainty.²⁵

According to the ADR, hedging against uncertainty involves maintaining a deterrent force while abiding by arms reduction treaty limits, while also allowing for additional forces to be reconstituted should more negative trends (in terms of US security interests) emerge. Thus the

NPR examined options for strategic nuclear force structures and re-examined the concept of a triad; the NPR rejected a minimal force that eliminated ICBMs and “determined (a triad) remains valid for a START II-size force.”²⁶ Further, it stated:

Today, the United States relies on fewer types of nuclear weapon systems than in the past. Hedging against system failure of a leg of a triad -- either because of technical failure of a delivery platform or warhead, or technological breakthroughs by potential adversaries -- is a primary reason to retain a triad. Each leg also has unique characteristics and specific advantages.²⁷

While the decision was made to maintain the traditional nuclear triad at START II force levels, it’s important to note ICBM elimination came to the fore in this first review of nuclear policy in the post-Cold War era.

At the same time, another relevant and recurring theme surfaces in the ADR—the need to sustain an industrial base for strategic missiles, reentry systems, and guidance systems. As such, the 1995 ADR recommended re-motoring and replacing the guidance system on Minuteman IIIs, and fund the sustainment of the guidance and reentry vehicle industrial base.

“A significant challenge in future planning will be to ensure the continued viability of the industrial base needed to maintain and modify deployed strategic ballistic missiles. For the first time since the late 1970s -- when Minuteman procurement was essentially complete and Peacekeeper development was just beginning -- the United States is not developing or producing any land-based ballistic missiles. Furthermore, development of a new ICBM is not anticipated for at least 15 years...The Department is also exploring new ways to preserve key industrial technologies; reentry vehicle and guidance technology are particularly problematic, given the lack of commercial applications...The budget...will ensure the United States retains an industrial capability to address guidance system problems and design prototype systems.”²⁸

In the next several ADR editions there were few substantial changes. One emerging area was in the Secretary of the Air Force section, which addressed the benefits of the ICBM force: “nuclear deterrence remains an important component of national security. The global attack capability of our ICBMs and nuclear capable bombers continues to provide the nation with an essential capability.”²⁹ Similarly in 1998, in the SECAF section: “The Minuteman III ICBM

fleet's rapid, global, precision strike capability rounds out the Air Force's global attack package.”³⁰

In the 2000 ADR, a new theme emerged. Vice just modernizing the existing ICBM force, now the SECAF spoke of replacing the missile force: “the Air Force has begun exploratory tasks to plan for a replacement to the Minuteman III around 2020.”³¹

It is the most current (2002) ADR that offers extensive coverage of US strategic forces, devoting a chapter of almost ten pages to summarizing the conclusions of a January 2002 review of the nuclear force posture. The only publicly released information consisting of a Department of Defense news conference (with slides), and a Secretary of Defense cover letter to Congress. The ADR and the NPR-related releases offer several direct and indirect mentions dealing with ICBMs; considering that the NPR is intended to develop a strategic posture for the 21st century, the following paragraphs will likely offer the most official nuclear force guidance available outside of classified channels.

Nuclear Posture Review

Secretary of Defense Rumsfeld's summary letter identifies several highlights of the NPR. The first is the adherence of strategic forces to the overall defense guidance of capabilities-based planning. With respect to nuclear forces, this approach means maintaining over the coming decades “a credible deterrent at the lowest level of nuclear weapons consistent with US and allied security.”³²

Rumsfeld's second main point was that “US strategic forces need to provide the President with a range of options to defeat any aggressor.”³³ This entails defensive as well as offensive systems capable of deterring and defeating any threats. The construct for this force requirement was a “New Triad,” consisting of non-nuclear and nuclear strike capabilities (the first leg), active

and passive defenses (second leg), and a responsive defense infrastructure being the third leg of the new triad.³⁴

In the above approach, the traditional nuclear triad (ICBMs, SLBMs, bombers) is part of the new triad's first leg. A key point of the NPR was that Rumsfeld was unequivocal in the need for ICBMs in this 21st century force posture: "ICBMs, SLBM, bombers and nuclear weapons will, of course, continue to play a vital role."³⁵

Chapter Conclusion

Several distinct considerations offer context to any discussion of ICBM relevance. As the review of the various national security documents points out, numerous factors of our nation's defense call for attributes associated with the ICBM. Whether to deter or defeat, ICBMs offer long-range strike requirements encompassing precision, speed, and lethality—considerations seen by our security guidance as necessary for national defense. At the same time, there is pressure to draw down or eliminate the nuclear arsenal, reflecting the belief by some that the post-cold environment has a diminished need for redundant triad legs. This also reflects the inherent survivability of the submarine-launched ballistic missile force, and the mainly conventional role of the remaining nuclear-capable manned bombers, which leave the ICBM as the odd-man out when it comes to picking a piece of the triad susceptible to divestiture. At the same time, ICBMs are the coin of the realm for aspiring force projectionists and the expected proliferation of weapons of mass destruction and their delivery by ballistic missiles offer a threat which the ICBM can help deter or defeat.

Notes

¹ General Lee Butler, ret., USAF, address to the National Press Club, Washington DC, 4 December 1996, n.p., on-line, Internet, available from <http://www.wagingpeace.org/articles/butlerspeech.html>.

² “Statement on Nuclear Weapons,” *The Washington Quarterly* 20, no. 3 (Summer 1997): 125-6.

³ *The Report of the Canberra Commission on the Elimination of Nuclear Weapons*, August 1996, n.p., on-line, Internet, available from <http://www.nuclearfiles.org/docs/1996/960814-canberra-ex-sum.html>.

⁴ Congressional Budget Office, *US Strategic Nuclear Forces: Deterrence Policies and Procurement Issues* (Washington DC: Congress of the United States, April 1977), 34.

⁵ Institute for Foreign Policy Analysis, Inc., *The Future of U.S. Land-Based Strategic Forces* (Cambridge, Massachusetts: 1980), 17.

⁶ According to an article by Bill Arkin, Assistant Secretary of Defense Ashton Carter was a vocal but lone figure in calling for force structure changes that would scrap the ICBMs. See William Arkin, “Bad Posture: The Nuclear Priesthood Slouches Onward,” *The Bulletin of the Atomic Scientists*, n.p., on-line, Internet, available from <http://www.thebulletin.org/issues/1994/ja94/ja94Arkin.html>.

⁷ Stephen J. Cimbala, ed., *Deterrence and Nuclear Proliferation in the Twenty-first Century* (Westport, Conn: Praeger, 2001), 136. Also, see chapter four of: Stephen J. Cimbala and James Scouras, *A New Nuclear Century : Strategic Stability And Arms Control* (Westport, Conn.: Praeger, 2002).

⁸ Office of the Under Secretary of Defense for Acquisition and Technology, *Report of the Defense Science Board Task Force on Nuclear Deterrence* (Washington DC, October 1998), 14.

⁹ “Nuclear Deterrence, Then and Now,” by Daniel Goure in *Policy Review*, Dec 2002, pp 2-6.

¹⁰ Keith B. Payne, *Deterrence in the Second Nuclear Age* (Kentucky: The University Press of Kentucky, 1996), 129.

¹¹ “Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States,” July 15, 1998, n.p., on-line, available from <http://www.house.gov/hasc/testimony/105thcongress/BMThreat.htm>.

¹² “CIA Answers to Questions for the Record: Worldwide Threat Briefing 2002,” n.p., on-line, available from http://www.fas.org/irp/congress/2002_hr/020602cia.html.

¹³ President, “The National Security Strategy of the United States of America,” September 2002, 35, on-line, Internet, available from <http://www.whitehouse.gov/nsc/nss.pdf>, 1.

¹⁴ Ibid.

¹⁵ Ibid., 14.

¹⁶ Ibid., 16.

¹⁷ Ibid., 29.

¹⁸ Ibid., 30.

¹⁹ Department of Defense, “Quadrennial Defense Review,” September 30, 2001, 79, on-line, Internet, available from <http://www.defenselink.mil/pubs>, 12.

²⁰ Ibid., 4. Also, on page 12 the QDR states: “In particular, the pace and scale of recent ballistic missile proliferation has exceeded earlier intelligence estimates and suggests these challenges may grow at a faster pace than previously expected.”

Notes

²¹ Ibid., 14.

²² Ibid., 21.

²³ Ibid., 30.

²⁴ Ibid., 44.

²⁵ Secretary of Defense, “Annual Report to the President and the Congress,” February 1995, n.p., on-line, Internet, available from <http://www.defenselink.mil/execsec/adr95/index.html>.

²⁶ Ibid.

²⁷ Ibid.

²⁸ Ibid.

²⁹ Secretary of Defense, “Annual Report to the President and the Congress,” April 1997, n.p., on-line, Internet, available from <http://www.defenselink.mil/execsec/adr97/index.html>.

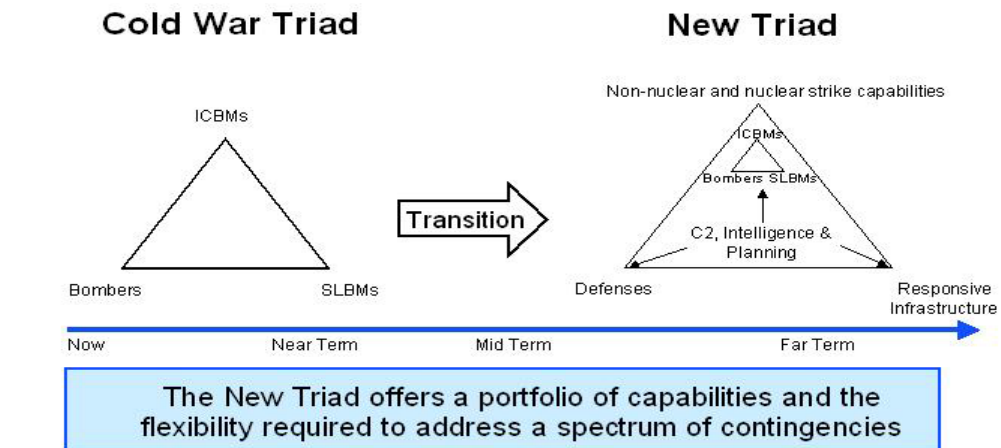
³⁰ Secretary of Defense, “Annual Report to the President and the Congress,” 1998, n.p., on-line, Internet, available from <http://www.defenselink.mil/execsec/adr98/index.html>.

³¹ Secretary of Defense, “Annual Report to the President and the Congress,” 2000, n.p., on-line, Internet, available from <http://www.defenselink.mil/execsec/adr2000/index.html>.

³² Secretary of Defense, January 2002, n.p., on-line, available from <http://www.defenselink.mil/pubs>.

³³ Ibid.

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Department of Defense, “Special Briefing on the Nuclear Posture Review,” 9 January 2002, n.p., on-line, Internet, available from http://www.defenselink.mil/news/Jan2002/t01092002_t0109npr.html.

³⁵ Ibid.

Chapter 3

The USAF and ICBMs

As the first chapter outlined, Air Force leaders need awareness of several key issues relevant to ICBMs. This chapter will address what the Air Force is already saying about ICBMs. The intent is to pull together information that may reside primarily within functional entities such as Air Force Space Command and is thus not as visible to the general USAF public. Further, this chapter will address intercontinental conventional strike, and it will also serve as a transition to the final chapter dealing with how the USAF initially approached ICBM development.

Intercontinental Strike--Requirements

Today, the Air Force generally eschews describing its capabilities in terms of individual weapons, favoring instead a focus on achieving battlespace effects. This effects-based viewpoint is usually associated with operations, and is also increasingly prominent in the development of new weapons. Evidence of this approach can be found in two areas related to the ICBM: the call for a new land-based strategic nuclear deterrent, and numerous studies dealing with long-range strike. Both are relevant to the future of the current ICBM force.

Land-based Strategic Nuclear Deterrent

In January 2002, Air Force Space Command developed a Mission Need Statement (MNS) for a land-based strategic nuclear deterrent. As a capstone acquisition document, the MNS is

intended to broadly outline the requirement for a new (or improved) weapon system. In this case, the MNS builds upon national-level guidance endorsing a continued reliance on land-based nuclear weapons to deter and, if needed, defeat aggression against the US.

The MNS identifies a range of capabilities the US will require in the 2020 timeframe as the current ICBM force ends its post-modernization lifespan. In particular, it states:

...a future credible land-based strategic nuclear deterrent force must be capable of rapidly holding at risk a wide range of surface and subsurface targets to include, but not limited to, fixed soft and hard targets; hard and deeply buried targets; chemical and biological production, storage, and delivery system facilities, strategic relocatable targets; heavily defended targets, and targets that emerge unexpectedly on short notice.¹

The MNS then goes on to discuss several hardware options to fulfill the above requirements. In particular, it sees as feasible two material alternatives: a Minuteman-based variant, and a new missile system. Both are to provide “on-demand force application, flexible force application, and flexible effects,” with attributes centering on the ability to precisely deliver a variety of warheads to achieve a variety of effects.² As figure 1 shows, the MNS anticipates a variety of requirements for the future ICBM, including traditional nuclear force needs (promptness, accuracy, survivability) and evolving needs such as deep earth penetration, the ability to deliver varied munitions, and global range and azimuth—all considerations which intersect with USAF long-range strike requirements.



Air Force Space Command briefing, “Land-based Strategic Nuclear Deterrent (LBSND) Analysis of Alternatives.”³

Long-range Strike Studies

The latest entry looking at long-range strike needs was noted on February 25th, 2003, by Defense News, which reported that the Undersecretary of Defense for Acquisition, Technology and Logistics is sponsoring a forthcoming effort to begin this summer. Specifically, a Defense Science Board task force is charged with addressing the evolution of nuclear and non-nuclear forces, including the role of ICBMs, particularly as they relate to Strategic Command’s global strike mission.⁴

At the same time, the Air Force has several efforts refining long-range strike needs. One is the November 2001 Long-Range Strike Aircraft White Paper, which reaffirmed the role of the manned bomber. This study called for a power projection capability built on the current bomber

force structure (with planned modernization) extending into the 2035 timeframe.⁵ However, the paper also acknowledged:

“It is likely that the next generation of long-range strike platforms and weapons will rely on revolutionary technology. The Air Force is actively engaged in analysis of the path to retain the best attributes of our current platforms (payload, range, and flexibility) while achieving stealth in all dimensions and improving our responsiveness and effectiveness against the full spectrum of potential targets.”⁶

A second effort is what Air Force Magazine reported as the Long-Range Strike Study—a key point being it is titled sans “aircraft”. The Air Force is using desired effects and capabilities, vice a platform-based approach, to determine the solutions for global strike needs. This study is not assuming the solution will be a manned aircraft. Rather, options including orbital, sub-orbital, exoatmospheric, aircraft or missile systems, and manned or unmanned platforms are being considered to meet underlying requirements such as speed, stealth, precision, and flexibility.⁷

Intercontinental Strike— Conventional ICBMs

Related to both of the above effects-based requirements is a potential solution—the intercontinental ballistic missile with a conventional warhead. Mounting other than atomic/nuclear warheads on ICBMs is not a novel idea; in fact, one of the original ICBMs uses conceived by senior military officers in the immediate post-Sputnik era was to “rocket men and supplies anywhere on the globe.”⁸

More recent (and realistic) discussions center on replacing nuclear with conventional warheads on current (as well as future) ICBMs. According to The New York Times, the commander of Air Force Space Command’s 20th Air Force recently stated “I’d be very, very surprised if 5, 10 years down the road, that we would not have a ballistic missile of some type

with conventional munitions on board so that it could serve the nation's needs for a prompt global strike.”⁹

Major Robert Gibson also espoused the conventional ICBM (C-ICBM) concept in the Fall 1997 issue of *Airpower Journal*, in which he wrote:

a “discriminatory weapon with global reach, based in the continental United States, must counter two areas of concern facing our new national military objectives: proliferation of weapons of mass destruction and regional instability. The time has come for a conventionally armed intercontinental ballistic missile.”¹⁰

Major Gibson then went on to highlight the advantages of the C-ICBM (readiness, accuracy, lethality, mobility) and some disadvantages (cost, collateral damage potential, need for precise targeting information).¹¹

A decade ago, an *Airpower Journal* article titled “The Ultimate Standoff Weapon” also well articulated the operational benefits of a conventionally armed ballistic missile. Advocating both a short-term use of surplus Minuteman missiles resulting from arms reductions, as well as a longer-term need to develop a new ICBM, the author noted several potential applications of a conventional ICBM. One is demonstrating resolve, in which the C-ICBM's short flight times to target as well as invulnerability to intercept would be a good complement to other options such as manned aircraft. A second application is to act as a force enabler by attacking heavily defended targets with little notice, thereby paving the way for follow-on operations by other forces. And a third use is as a crisis response tool, in which a C-ICBM could destroy threatening weapons quickly.¹²

Related to the last of the previous three potential applications is the counter-proliferation focus of the various national security documents covered earlier. The expectation is that chemical or biological stockpiles as well as other critical targets are becoming hard and deeply buried targets requiring deep earth penetration. The C-ICBM is offered as a means to hold this

target set at risk. In a Carnegie Endowment for International Peace working paper on counterproliferation options, the author notes the benefits of deep-earth penetration by ballistic missiles:

“To further increase impact speed and thus penetration depth, intercontinental ballistic missiles (ICBMs) or submarine-launched ballistic missiles (SLBMs) equipped with conventional penetrator warheads, rather than with nuclear weapons, are the most promising option. Such missiles can easily achieve the necessary impact speed for maximum penetration; in fact, braking mechanisms will likely be necessary to ensure that their payload does not impact at speeds too high for the warhead to withstand. Existing ICBMs can deliver one-ton payloads, implying that a single converted ICBM might be able to deliver several BLU-116-type penetrators.”¹³

Critics of conventionally armed ballistic missiles often cite the notion that Russia (and to a lesser extent China) would still take issue with C-ICBM launches (even if not directed at Russia and China or their interests). Such arguments build upon the polar routes used by ICBMs and the deteriorating state of Russian early warning systems as a major cause for pause.

However, in a August 2001 Aerospace Power Journal article, Dr. Robert Butterworth addressed the topic and concluded a small number of conventional ICBMs would not hinder deterrence and could, in fact, be useful to stability between the US and Russia. He notes: “by providing the US with a nonnuclear option for prompt response at intercontinental ranges, these weapons would even increase Russian confidence that a nuclear strike by the US against a target anywhere is most improbable.”¹⁴ Also, a Sandia National Laboratories white paper on 21st century nuclear weapons policy offers “if future missiles can have greatly increased ranges, allowing them to fly over the South Pole or at other polar angles, the difficulty of avoiding Russian overflight paths would be alleviated.”¹⁵

Chapter Conclusion

As the previous pages showed, there are several key drivers influencing future ICBM needs. Foremost is to fulfill national security guidance (from chapter one) that a triad will remain essential to US national security. Hence, the Air Force is in the midst of articulating the requirements for a future land-based component of the nuclear triad. At the same time, national security guidance calls for having a global strike capabilities with key attributes such as responsiveness, lethality, precision, etc. Again, the ICBM (this time with different warheads, notably a conventional explosive) offers a solution. Thus, understanding how the USAF initially developed the ICBM and more importantly, the resulting lessons, is the next chapter's intent.

Notes

¹ Air Force Space Command, "Land-based Strategic Nuclear Deterrence Mission Need Statement," 18 January 2002, p 2.

² Ibid., 2, 4.

³ Air Force Space Command unpublished program briefing, "Land-based Strategic Nuclear Deterrent (LBSND) Analysis of Alternatives," 14 December 2002, slide 6.

⁴ Amy Svitak, "DoD Task Force Will Study US Long-Range Strike Capabilities, Needs," *Defense News*, 25 February 2003, n.p., on-line, Internet, available from http://www.defensenews.com/pgt.php?htd=i_story_1615203.html&tty=worldwide.

⁵ United States Air Force, "Long-Range Strike Aircraft White Paper," November 2001, 36, on-line, Internet, available from <http://www.af.mil/lib/bmap01.pdf>, v.

⁶ Ibid.

⁷ John A. Tirpak, "Long Arm of the Air Force," *Air Force Magazine Online* 85, no. 10, October 2002, n.p., on-line, Internet, available from <http://www.afa.org/magazine/Oct2002/1002longarm.asp>. Also, informal discussions with AF/XOR action officers noted that a "Long Range Strike Platform Study" was in the works; however, it is in Special Access Required channels, leaving the Air Force Magazine article the most accessible, published work on the subject.

⁸ Paul Dickson, *Sputnik* (New York: Walker & Company, 2001), 186-7.

⁹ Eric Schmitt, "US Considers Conventional Warheads on Nuclear Missiles," *New York Times*, 24 February 2003.

¹⁰ Maj Robert Gibson, "Conventionally Armed ICBMs," *Airpower Journal*, Fall 97, n.p., on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj97/fal97/wayfal97.html>.

¹¹ Ibid.

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¹² Lt Col John R. London III, “The Ultimate Standoff Weapon,” *Airpower Journal*, Summer 1993, n.p., on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/london.html>.

¹³ Michael A. Levi, *Fire in the Hole*, Carnegie Endowment for International Peace Working Paper no. 31 (November 2002), n.p., on-line, Internet, available from <http://www.ceip.org/files/pdf/wp31.pdf>.

¹⁴ Dr Robert L. Butterworth, “Out of Balance,” *Aerospace Power Journal*, Fall 2001, n.p., on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj01/fal01/butterworth.html>.

¹⁵ C. Paul Robinson, *Pursuing a New Nuclear Weapons Policy for the 21st Century*, Sandia National Laboratories White Paper, 22 March 2001, n.p., on-line, Internet, available from <http://www.sandia.gov/media/whitepaper/2001-04-Robinson.htm>.

Chapter 4

How the USAF Approached ICBM Development and Resulting Lessons

“The marriage of American atomic weapon technology with German rocketry produced what is arguably the single most influential weapon of the 20th century—the Inter-Continental Ballistic Missile.”¹ Born from Nazi Germany’s development of its V-2 rockets, America’s ballistic missile development was spurred into rapid development and fielding by the Soviet Union’s launch of the Sputnik satellite. Missiles of varying ranges were a seemingly natural delivery means for the then currency of the military realm—the atomic/nuclear weapon. However, their initial development was not something the post-World War II Air Force embraced.

Birth Of the ICBM During the USAF’s Infancy

According to Edmund Beard, author of a prize-winning work—“Developing the ICBM: A Study in Bureaucratic Politics”—“a general emphasis on manned bomber systems (or on missile types that did not threaten them) with a slow, conservative approach to ballistic missiles persisted within the Air Force.”² As early as 1945, the Commanding General of the Army Air Forces, General Hap Arnold, well articulated this perspective:

Improvements in aerodynamics, propulsion, and electronic control will enable unmanned devices to transport means of destruction to targets at distances up to many thousands of miles. However, until such time as guided missiles are so

developed that there is no further need for manned aircraft, research in the field of “conventional” aircraft of improved design must be vigorously pursued.³

The low emphasis on missile development spanned the immediate post-World War II period until the mid-1950s, and is attributable to several key factors. One of the most important was the level of funding, particularly for research and development. In the latter years of World War II and immediately after, the US military’s resources were sufficient to fund exploitation and reverse engineering of German rockets, as well as various stages of development of over twenty different missile programs. However, the nation did not sustain high military expenditures shortly after V-E and V-J days, and the Air Force (as did all of DoD) found itself slashing research and development dollars for the sake of sustaining its fielded forces.⁴ Little changed in this regard with the increased defense spending brought on by the Korean War, as funds were generally directed toward weapons fielding and operational costs.

A second factor was the issue of technology, which in the late-1940s was seen as a limiting aspect for viably fielding ballistic missiles. Issues such as not having fuels of high specific impulse, high temperatures during atmospheric re-entry, and atomic weapon warhead weights contributed to conventional wisdoms which didn’t expect ballistic missiles of intercontinental ranges for a decade or more.⁵

In addition to low dollars and technological challenges, ICBMs suffered lack of emphasis because they were considered a distraction from the Air Force’s main effort. “In the 1950s, the bomber generals, particularly Curtis LeMay, fought research and development for ICBMs, believing that they were an expensive and unnecessary adjunct to manned bombers.”⁶ This seems a natural reaction for a fledgling Air Force that emerged from victories over Germany and Japan that seemingly vindicated the war-winning contributions of strategic bombing. It also dovetails well with the main contextual factor of the time—the advent of the Cold War. The

USAF was naturally much more interested in being prepared to fight than it was in spending what were becoming scarce defense dollars on an unproven technology. Thus, the AF put the majority of its focus in atomic bombs delivered by bombers.

While the previous three factors militated against emphasis on ICBMs, at least one major issue kept the issue in the fore for the Air Force. The other services were actively exploring combining atomic warheads with delivery means built upon the basics of V-2 technology. In what was to be a thorn in the Air Force's side for several years, a 1944 Deputy Chief of Staff of the Army memo delineated responsibilities for ballistic missile development within the Army. While the Army Air Force had the lead for research and development of air-launched missiles and those missiles relying on aerodynamic lift, the Army Ground Forces had responsibility for ground-launched ballistic and guided missiles.⁷ The Air Force fought this policy, primarily on the grounds that it had the overall responsibility for strategic bombing. And while for the foreseeable future manned bombers would fulfill the strategic bombing role, the Air Force believed "it was important...that other services not develop such weapons which would compete with the Air Force responsibility and the chosen Air Force vehicles. Air Force distribution-of-responsibility agreements with the other services were designed to prevent such competition."⁸

Overall, Edmund Beard describes the Air Force's initial approach to ICBM development as "neglect and indifference."⁹ During the early 1950s this stance slowly dissolved, primarily through prodding and promotion from both within the Air Force (in the R&D community) and from outside (via JCS appointed commissions and directors for ballistic missile development). In April 1954, the Air Force established the Assistant Chief of Staff for Guided Missiles and also called for a task force to study accelerating the production of an ICBM.¹⁰ Brigadier General

Bernard Schriever was chosen to head the latter effort; he was ultimately considered the father of the USAF space and missile program.

Further spurring the Air Force into action were several actions. Congress stepped into the fray by holding hearings on the state of both US and USSR ballistic missile development; this resulted in findings and recommendations to President Eisenhower essentially calling for the US to win the ICBM race. In turn, the President directed the Secretary of Defense to pursue ICBM development at the highest national priority. This opened the door for solutions which essentially bypassed corporate Air Force obstinacy. Beard notes this process in a chapter entitled “Skirting the Bureaucracy,” and outlines the above process:

...the type of problems and delays that had heretofore beset the American ICBM program generally were eliminated. The ICBM had been designated the highest national priority by Presidential directive. The program was separated from the normal development channels within the Air Force and the Department of Defense. An entirely new agency had been created specifically to manage the ballistic missile programs. Budget requests for the program (were to be submitted) separately from all other service programs...These were striking changes in the normal mode of operations. Their effectiveness was very high and almost totally eliminated the kinds of delays, obstruction, and funding scarcity that had plagued the (ICBM) program in its early years.¹¹

Then in 1957 the Sputnik launch shocked the United States—and the Air Force accelerated its nascent ballistic missile program. In less than a decade, it fielded three generations of ICBMs (Atlas, Titan, Minuteman)¹² and further established the service’s central role in the nation’s nuclear defense posture. As they began to supplement and then supplant manned bombers, ICBMs helped mitigate some of the bomber’s inherent risks; attributes such as speed, survivability and economy helped highlight the ICBM’s potential. At the same time, manned bombers long continued to have a nuclear delivery role, and helped offset ICBM shortcomings such as an inability to be recalled after launch, slow reaction (at least initially with liquid fueled missiles), low payload and inaccuracy.¹³ Throughout the decades of the 1960s and 1970s, the

Air Force continued to refine its fielding and operational integration of the ICBM, culminating in a force considered a central figure in the nation's cold war victory.

Impact to Air Force Culture and Airpower Theory

In his seminal work "The Icarus Syndrome," Carl Builder indicts the Air Force for devotion more toward aircraft than on the concepts and theories of air power. According to Builder, the corporate Air Force did not initially accept the advent of other means (such as unmanned aerial vehicles and missiles) to deliver firepower. Instead, the Air Force focused almost singularly on aircraft and flying and did not recognize the larger ends of air power, leading to institutional malaise.¹⁴

Builder does note "guided missile enthusiasts collected together within each of the three services, just as the aviators had in the Army and Navy almost a half century earlier."¹⁵ Within the Air Force, however, these proponents were a minority both in numbers and impact. The Air Force emphasis remained largely on aircraft, specifically bombers; and while Builder points out that the Air Force made strides in the 1950s to cement its primacy in deterrence and strategic attack, this doctrinal approach lost focus as the Air Force fought to develop bombers such as the B-52 and B-70 at the expense of evolving ballistic missiles.

As stated by Lt Col John Shaw in *Air and Space Power Chronicles*, for the Air Force "the ICBM...completely transformed the nature of strategic warfare, effectively and ultimately realizing Douhet's theories of indefensible aerial bombardment. ICBMs could visit megatons of destruction on any point on the globe with little or no chance of being intercepted."¹⁶ For Builder, the ICBMs should have been a benefit, not a hindrance, in terms of their contributions to air power theory. They offered a means to hold targets at risk, fulfilling the prophecies of air power prophets such as Douhet, Mitchell and Trenchard.

That ICBMs were not institutionally embraced in an Air Force in which some senior leaders (such as Arnold and Spaatz) accepted alternatives to manned aircraft, Builder also found astounding. The Air Force eventually became compelled to include ballistic missiles by a combination of foreign threat (the USSR had ICBMs—hence a “missile gap”) and internal (presidential and SecDef) direction.¹⁷ This acceptance, however, led to an unintended (or unrecognized) consequence. The Air Force then abrogated the advancement of air power theory by not integrating ICBMs into its doctrine and culture, and also settled on civilian dominated nuclear theory to drive strategic weapons employment. According to Builder, “Deterrence theory, unlike air power theory, was a logistical theory of destruction rather than a theory of new means for waging warfare. Deterrence theory was indifferent to the means for transporting weapons except for the costs to provide delivered weapons. Deterrence theory was the domain of scientists and analysts, not aviators or pilots.”¹⁸

Thus, Builder argues the Air Force missed two opportunities to advance airpower theory—the true “end” for the Air Force as an institution. First, it continued to give primacy to the manned aircraft and failed to fully accept the ICBM as a airpower means. Secondly, by being in the background of nuclear warfare theory development, the Air Force let slip its ability to expand airpower theory. Both of these helped contribute to an Air Force which, combined with its biased focus on the manned aircraft, lost track of its *raison d’être*.

Chapter Conclusion

Thus two key points emerge from the preceding discussion of the ICBM’s birth and integration. First, the Air Force has a history of ignoring or at least underemphasizing new and innovative ways of delivering firepower through the air and space medium; and secondly, the Air Force was on the sidelines of deterrence theory development. The issue for the Air Force to now

contemplate is if, 45 years after its initial development, it still sees limited utility for the ICBM—similar to the Army’s limited initial use of the airplane (reconnaissance). Or, can the Air Force learn from what Beard outlined as “neglect and indifference” and Builder considered an “abrogation”—essentially, can the ICBM be maximized by a service that prides itself on the ability to deliver firepower responsively throughout the globe.

Notes

¹ John Shaw, “The Influence of Space Power upon History (1944-1998),” *Air & Space Power Chronicles*, n.op., on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles/cc/shaw.html>.

² Edmund Beard, *Developing the ICBM: A Study in Bureaucratic Politics* (New York : Columbia University Press, 1976, 8.

³ Ibid., 72.

⁴ By 1950, Beard notes the USAF missile program consisted of four projects, down from a high of twenty-six. See page 105.

⁵ Beard, 56.

⁶ Lt Col Steven C. Suddarth, “Solving the Great Air Force Systems Irony,” *Airpower Journal*, Spring 2002, n.p., on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj02/spr02/suddarth.html> .

⁷ Beard, 21-22.

⁸ Beard, 105.

⁹ Beard, 8.

¹⁰ Beard, 169-71.

¹¹ Beard, 193-4.

¹² Suddarth.

¹³ Col Phillip S. Meilinger, ed., *The Paths of Heaven* (Maxwell AFB, AL: Air University Press, 1997), 283.

¹⁴ Carl H. Builder, *The Icarus Syndrome* (New Brunswick, NJ: Transaction Publishers, 1996), 32-7.

¹⁵ Builder, 33.

¹⁶ Shaw.

¹⁷ Builder, 171-6.

¹⁸ Builder, 208. Also, see Builder, 176-7.

Chapter 5

Conclusion

“Most Air Force personnel at the Air Staff level (and probably elsewhere) simply denied that an “accurate” long-range rocket was possible, at least in the foreseeable future...The bomber was (and indeed still is) the central focus of identification within the Air Force. To conceive of a new weapon that might someday perform its primary task much more efficiently would require great restructuring of beliefs.”¹

Beard, Developing the ICBM, 237-8

As it serves the nation’s defense in the coming years and decades, the Air Force will face competing influences with respect to the ICBM. The previous pages have been an attempt to explore a variety of issues, many of which can form a basis of knowledge for future ICBM-related decisions.

Policy-wise, current national guidance is clear with respect to the ICBM’s future—as chapter two showed, the executive branch and Defense Department unmistakably deem the ICBM as integral to security. This policy has been translated into action, with continuing Minuteman III modernization as well as replacement with a new missile in the 2020 timeframe both in the offing. However, the Air Force must be aware this trend could shift if several considerations come to the fore. For example, future policymakers could advocate nuclear arms reductions, a different (non-triad) deterrent posture, or even nuclear disarmament.

Assuming national guidance steers the current course, it behooves the Air Force to continue refining its contribution to needs such as strategic deterrence and countering the proliferation of

weapons of mass destruction. To this end, the various guidance documents showed the need for weapons with attributes including long-range, responsiveness, precision, and lethality against a wide array of targets.

The above attributes dovetail well with several Air Force core competencies and emerging concepts. Regarding the former, in 1996 the Air Force published *Global Engagement*, which delineated a “new understanding of what air and space power meant to the nation—the ability to hit an adversary’s strategic centers of gravity directly as well as prevail at the operational and tactical levels of warfare.”² Central to this vision were several core competencies, which result from the integration of air and space power and are distinguished by the Air Force’s speed, flexibility, and global reach and perspective.³

ICBMs and some core competencies are related. In “*Global Attack*,” which reflects the ability of the Air Force to attack anywhere globally at any time, ICBMs are mentioned for their nuclear deterrence contributions. More indirectly, “*Global Attack*” recognizes that “capabilities based in the continental United States will likely become the primary means for crisis response and power projection as long-range air and space-based assets increasingly fill the (*Global Attack*) requirements.”⁴ For the “*Precision Engagement*” core competency, the Air Force provides overwhelming but discriminating effects; inference also allows one to see the potential benefits of the ICBM as an intercontinental conventional warhead delivery platform.

A current concept known as the “*Global Strike Task Force*” (GSTF) is the latest operationalization of *Global Engagement* and its core competencies. General John Jumper, the current Chief of Staff of the Air Force, has touted the GSTF as part of the nation’s rapid reaction, “kick down the door” force. Hinging on the precision weapons and stealth of the B-2 and F-22, and enabled by extensive intelligence/surveillance/reconnaissance, the GSTF is seen as a near-

term solution providing “rapid-reaction, leading-edge, power projection...(delivering) massive around-the-clock firepower.”⁵ Understanding that General Jumper’s focus was on developing a concept of operations for near-term systems helps understand why there is no mention of intercontinental strikes by other than manned aircraft in GSTF. However, the concept itself gives hope that if the Air Force is flexible enough to successfully transition the B-2 from Cold War nuclear bomber to door kicker, then the ICBM (or other weapons) also could be used to fulfill the GSTF or its successor constructs.

Recommendations

The development and integration of the ICBM offers several lessons. Foremost is that the Air Force needs to be attuned to developments concerning the ICBM, not only for what it did in years past (“the single most influential weapon of the 20th century”), but also on what it can still do to serve the nation’s defense.

In terms of theory and doctrine, deterring the use of weapons of mass destruction by a variety of actors (not just the Cold War’s singular adversary) and counterproliferation are clearly at the center of US national security concerns. One challenge for future Air Force leaders is to fully incorporate these security concerns, and the attendant contributions of the ICBM, into airpower theory and Air Force doctrine. This is not only needed to avoid Carl Builder’s indictment on deterrence theory abrogation, but also to ensure potential new means of airpower (i.e., the conventional warhead-equipped ICBM) are fully integrated into Air Force thinking.

A second recommendation is for the Air Force to be prepared to react to the vagaries of nuclear disarmament. While current national guidance solidifies a nuclear triad, should arms control or disarmament (or even de-nuclearization) pressures build, the ICBM is the most

vulnerable of the triad's leg to divestiture. So while delivering nuclear warheads from a land-based silo may someday become unnecessary, the Air Force could profit by employing the idea in a new fashion—namely, to precisely and rapidly deliver other munitions anywhere on the globe, with minimal preparation and cost and with no lives at risk.

Finally, in the coming decades the Air Force may develop and field other weapon systems which will challenge the status quo in the same way the ICBM challenges the post-World War II bombers. For example, unmanned combat aerial vehicles are on the horizon, and the Air Force is also considering delivering firepower from sub-orbital or orbital platforms. The challenge is for the Air Force to learn from the ICBM's initial spurning (and also, one could argue, to learn from the airplane's initial spurning, when the Army relegated it to a reconnaissance vice combat role), and to avoid repeating past mistakes.

Numerous influences will determine the fate of the ICBM in the 21st century, many of which will be beyond the Air Force's control. However, if history can be considered an event vector, the Air Force will be in the midst of any future ICBM developments, whether in policy formulation or implementation. The challenge is to recognize national security needs and the opportunities an intercontinental ballistic missile presents, and to best integrate the two.

Notes

¹ Beard, 237-8.

² Department of the Air Force, "Global Engagement: A Vision for the 21st Century Air Force." Washington DC: 1996, 1.

³ Ibid., 9.

⁴ Ibid., 11.

⁵ General John P. Jumper, "Global Strike Task Force," Airpower Journal, Spring 2001, n.p., on-line, Internet, available from <http://www.airpower.maxwell.af.mil/airchronicles/apj/apj01/spr01/jumper.htm>.